CLASSIFICATION CONFIDENTIAL

CENTRAL INTELLIGENCE AGENCY
INFORMATION FROM
FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT
CD NO.

COUNTRY USSR

SUBJECT Economic - Thread milling

HOW PUBLISHED Monthly periodical

WHERE PUBLISHED Moscow

DATE PUBLISHED Mar 1948

LANGUAGE Russian

DATE OF INFORMATION 1948

DATE DIST. Jul 1949

NO. OF PAGES 4

SUPPLEMENT TO REPORT NO.

THIS IS UNEVALUATED INFORMATION

SOURCE Stanki i instrument, No 3, 1948 (FDB Per Abs 76T27.)

TWO ADVANCES IN THREAD MILLING

1. SECTIONAL THREAD-MILLING CUTTER

Engineers G. S. Ratushev,
B. F. Sevast'yanov

/Figures 1 - 4 are appended./

Thread cutting on flat milling dies is usually done by thread-milling cutters made from high-speed steel. In addition to the lack of thread-grinding machines for cutting clearance along the cross section of the thread, there is the difficulty of producing the customary thread-milling cutter. The available machines permit a clearance of 0.2-0.3 mm, thus limiting the cutter's time of service to the third regrinding.

The cutting of circular threads and grinding of the profile with the aid of an index head requires a great deal of time. During the grinding of ring-shaped grooves, the wheel must be corrected every 4-5 threads, in proportion to the amount its abrasion decreases the depth of the groove and increases the internal radius.

The sectionally constructed cutter described in this article simplifies the technological process considerably and saves man-hours in preparing a fine-pitch cutter. Its utilization of high-speed steel is economical.

The sectional cutter (Figure 1) consists of a housing (1), a separator (2), a nut (4) with 12 screws and 12 removable teeth (3). The removable teeth are numbered from 1 to 12 and are set in the slots of the separator according to number. After this, the nut (4) is screwed on the housing, and each of the teeth is fastened down by screws.

CLASSIFICATION CONFIDENTIAL

STATE	X	NAVY	X	NSRB	DISTRIBUTION
ARMY	X	AIR	X	FBI	

CONFIDENTIAL

50X1-HUM

The cutting and grinding of the thread on the working surface of the teeth is effected by a device (Figure 2) which is distinguished from the sectional cutter by the presence of an additional bearing disk (4) and by the fact that the slots under the teeth are displaced 6 mm from the axis of the separator. In the cutter's separator this displacement is equal to 2 mm, due to the fact that during the installation of the cutter in the housing, the teeth obtain the standard back angle with the necessary clearance, which allows 2-3 times more regrinding than does the usual cutter.

There are 12 projections (Figure 3) on the face of the bearing disk (4). Each succeeding projection has an elevation "b," which is less than the elevation of the preceding one by 1/12 of the pitch. The difference of the dimensions $b_1 - b_o$ is equal to the pitch of the thread of the given cutter.

The disk for cutting threads with a pitch of 0.5 mm has two groups of projections. Of these, the odd ones coincide in value with their corresponding projections on a disk for cutting threads with a pitch of 1 mm, while the even ones are 0.5 mm less than the projections corresponding to them. This is done to avoid the difficulties of cutting threads with a pitch of 0.5 mm. A pitch of 1 mm is maintained during the cutting of threads on blades for dies with M3 x 0.5. During the installation of the teeth in the housing of the cutter, a pitch of 0.5 mm is obtained because of the 0.5-mm displacement of the teeth of the even group with respect to the blades of the odd group. In contrast to cutters with other values of pitch, which have 12 projections on each circle (according to the number of blades), the cutter with a 0.5-mm pitch has six projections, in all, on each circle.

To cut threads with a back pitch on the blades, the appropriate bearing disk (4) is slipped on the housing (1). The teeth are inserted into the slots of the separator directly in the order of their number and fastened by screws between the screws of the bearing disk and the nut (5). After this is done, the thread-cutting on the teeth is carried out in the customary order. The teeth with the cut threads are also inserted in the sectional cutter in the order of their number

The construction of the sectional cutter and the technology of its manufacture have made the operation of clearance unnecessary, reduced the man-hours for its production sixfold in comparison with the usual cutter, and have increased its longevity eight times, besides increasing the number of regrindings possible.

II. GEOMETRY OF GRINDING CHASERS OF THREAD-GENERATING HEADS

Engr A. B. Frenkel'

One substantial defect of chasers is that they frequently pick up the workpiece during thread cutting. This leads to chipping and breakdown of the chasers.

The picking up takes place when the chaser is ground low with respect to the center of the workpiece being cut, or in case of their comparatively high installation when the cutting edges are inclined at an insufficient angle.

An increase in the stability and useful life of the chasers was achieved by the ZIS system of increasing the angle λ up to 7-8 degrees, instead of the previously accepted 1-1.5 degrees (Figure 4). A decrease in the cutting coils of the partition piece with respect to the center of the workpiece takes place with increase in the angle λ . This leads to an increase in the back angles on the partition piece. This increase in the elevation of the standardized screws does not allow the chasers to draw in the workpiece and eliminates picking up of the latter.

CONFIDENTIAL

CONFIDENTIAL

Test of a chaser with angle λ equaling 7-8 degrees was conducted under production conditions on thread-cutting machines with cutting speed 8-11 meters per minute, cooled by sulfofrezol [sic].

Nine sets were tested: Three sets each of 1/2"-13 threads and 1/2"-20 threads with 40 X (improved) steel and three sets of 3/4"-16 threads with 45 (calibrated) steel. The results of the experiment are shown below

Dimension of Screw Die	No Bolts Cut at $\lambda = 1°30''$	$\lambda = 7°$	Improvement in Stability
1/2" - 13 threads	730	1,670	2.3 times
1/2" - 20 threads	670	1,060	1.6 times
3/4" - 16 threads	1,517	2,060	1.3 times

The substantial increase in stability is explained by the resulting decrease, by at least twice, in the dulling of the chasers along the back edge.

Picking up of the workpiece by the chasers and their subsequent breakdown decreased sharply. The cutting force and the torque also decreased markedly during the use of chasers with the shifted point.

[Figures follow.]

CONFIDENTIAL

Sanitized Copy Approved for Release 2011/07/07 : CIA-RDP80-00809A000600240479-4

CONFIDENTIAL

50X1-HUM

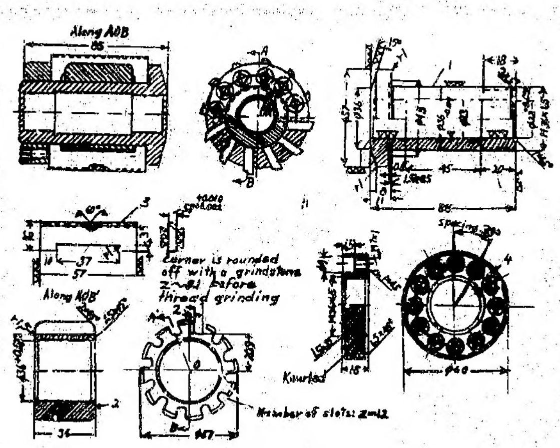

Figure 1

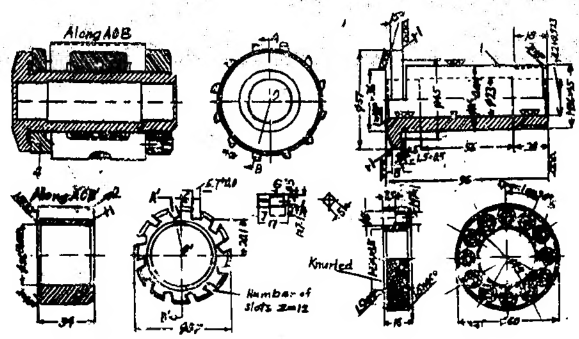

Figure 2

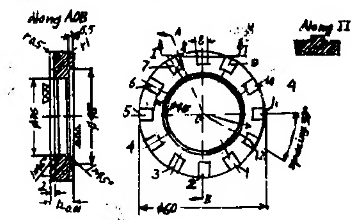

Figure 3

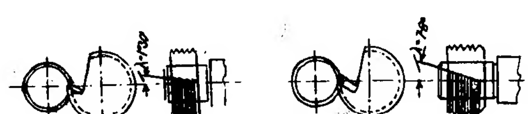

Figure 4

- END -

CONFIDENTIAL

Sanitized Copy Approved for Release 2011/07/07 : CIA-RDP80-00809A000600240479-4